

Transportation Executive Information System (TEIS) Study



**A Report of the Washington State
Legislative Evaluation and Accountability Program (LEAP)
Committee**

December 2006

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December 1, 2006

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Dear Senator Haugen, Representative Murray, and Mr. Moore:

The 2006 Supplemental Transportation Budget directed the Legislative Evaluation and Accountability Program (LEAP) Committee to evaluate the business needs of the legislative transportation fiscal committees and recommend improvements with respect to the Transportation Executive Information System (TEIS) by December 1, 2006.

We are very pleased to present you with the Transportation Executive Information System Study. An electronic copy of the study is available on our website.

Please contact the LEAP office at 360-786-6111 if you have questions.

Sincerely,

A handwritten signature in black ink that reads "Tom Jensen". The signature is written in a cursive, flowing style.

Tom Jensen
Administrator

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EXECUTIVE SUMMARY

The 2006 Supplemental Transportation Budget directed the Legislative Evaluation and Accountability Program (LEAP) Committee to evaluate the business needs of the legislative transportation fiscal committees and recommend improvements with respect to the Transportation Executive Information System (TEIS) by December 1, 2006.

Background

TEIS was created in 1988 to assist the transportation committees in developing the capital portion of the transportation budget and to further assist in the execution of their statutory oversight responsibilities. TEIS is a suite of programs designed to facilitate legislative planning and oversight and to provide information about a variety of transportation-related activities. It has since evolved into a mission-critical budget development and oversight system utilized by the Legislature, the Office of Financial Management (OFM), and the Department of Transportation (DOT).

In 2000, application support of TEIS was moved from a private contractor to DOT. The Legislature retained ownership of the system, and DOT became the system operator. DOT's responsibilities encompass ongoing TEIS system design, development, and maintenance. The location of TEIS at DOT was considered a temporary placement that would be readdressed as needed at some point in the future. The changing use of TEIS has reinforced the need to revisit where it is located and how it is configured.

In 2003, the Legislature passed a transportation revenue package (Nickel Account) to support a list of projects and programs identified in the transportation budget. The appropriations from this account required for the first time that oversight systems track capital expenditures at the project level by funding source. These new business requirements resulted in changes to how TEIS was used.

In 2005, the Legislature created the Transportation Partnership Account (TPA). As with the Nickel Account, projects funded from TPA and included in the 16-year financial plan require tracking by fund at the project level. In 2005, the Legislature also altered the role of the Transportation Commission, made DOT a cabinet agency, eliminated the Legislative Transportation Committee (LTC), and transferred ownership of TEIS to the newly-formed Joint Transportation Committee (JTC).

Conclusions

The legislative transportation committees, OFM, and DOT have a common need for a transportation capital budget development system and the ability to monitor expenditures in relation to budgeted plans. In addition, DOT uses TEIS as a project management, reporting, and oversight tool throughout the organization. This usage of TEIS has grown dramatically in recent years. As a result of DOT becoming a cabinet level agency, OFM's role in the business of transportation budgeting and monitoring is evolving.

In response to a Joint Legislative Audit and Review Committee (JLARC) capital budget audit, OFM's internal capital budget system (BuildSum) and the line agency capital budget development system (CBS) are in the process of being combined and redesigned. OFM is assessing the feasibility of

incorporating modifications into this new system that would allow them to address the transportation capital budget needs more effectively. In addition, OFM is planning to evaluate enhancement of their revenue projection system to support transportation-specific fund balance requirements.

The budget development cycles for the three primary user groups occur at differing times throughout the year. DOT is required to develop and submit a budget to OFM. Then, OFM develops a budget for submittal to the Legislature. The Legislature needs a secure and confidential environment in which to develop several versions of the budget that result in a final legislative budget as well as a balanced project list spanning 16 years. Each group requires system changes, enhancements, and guaranteed system stability at differing times to meet their distinct business needs. This creates a challenge for technical staff to be able to accommodate requests for changes and enhancements in a timely fashion. TEIS does not currently meet the need in the legislative environment for a quick, reliable, accurate, and user-friendly budget development and oversight tool.

Recommendations

During the study process as legislative business needs were defined, reprioritization of 2006 Interim system change requests was recommended and occurred, which is resulting in system improvements that will provide immediate benefit to TEIS users, enabling TEIS to better meet their business needs. Some key improvements that will be implemented for the 2007 legislative session include: automated interfaces between TEIS system components and between TEIS and external systems; improved project identification tracking; improved project reporting; and improved systems and data security. In addition, a new and updated Service Level Agreement between the JTC and DOT was put in place.

Although a new transportation capital budgeting and oversight system is needed, TEIS needs to continue in use through the 2008 legislative session with limited modifications. During that period, replacement systems should be developed for use by the 2009 legislative session. OFM is currently developing a new Omnibus Capital Budget Development System and are planning to expand the scope to include the transportation capital budget. This new system could be the replacement for the capital projects component within TEIS. Additionally, new reporting and fund balance systems would need to be defined and developed to integrate with that system. In order to provide necessary oversight capability for the Legislature and OFM, OFM needs to require that project-level capital data be made available within the Agency Financial Reporting System (AFRS) as part of the monthly expenditure reporting.

As OFM continues work on the statewide system used for capital budgeting, the Legislature, OFM, DOT, and other transportation stakeholders need to work collaboratively to identify the detailed business requirements that are unique to transportation and assist in incorporating those requirements into the new system. At the same time, new fund balance and reporting systems need to be defined and developed. The Legislature will need its own version of these systems, which will eliminate the Legislature's long-term need for TEIS. LEAP will require additional staffing and funding resources to develop and support a robust budget development and oversight system that meets the unique needs of the legislative transportation committees.

OVERVIEW

Introduction

The 2006 Legislature directed the LEAP Committee to conduct a study of the Transportation Executive Information System (TEIS). The purpose of the study was to evaluate the current and emerging business needs of the legislative transportation fiscal committee staffs and recommend improvements with respect to TEIS by December 1, 2006. Refer to Appendix A for the authorizing language.

Key drivers for initiating this study included: expanded and evolving user roles; competing demand for system improvements; concerns about system deficiencies and data security; and significant technical support staff turnover.

This study report offers recommendations and strategies that address the business requirements for current and prospective users of TEIS. The study effort focused on ways to improve the usefulness and usability of the system. In addition, the study sought to explore opportunities to leverage the diverse business requirements for TEIS along with the increased use of TEIS by the executive branch. Redesign and redevelopment of the system were outside the scope of this study.

Background & History

TEIS is a legislatively-owned system, providing mission-critical budget development tools for use by the transportation committees of the Legislature. TEIS is similarly mission-critical to the budget development processes of OFM and DOT. It is a suite of programs designed to facilitate legislative planning and oversight and provide information about a variety of transportation-related activities to the JTC, the House Transportation Committee (HTC), the Senate Transportation Committee (STC), OFM, and transportation agency managers.

TEIS was initially developed in 1988 as an Executive Information System to support the strategic information needs of the legislative transportation committees. Over time, the system evolved into a budget development and oversight system used by executive branch agencies as well as the Legislature. Through 2000, a private contractor had primary responsibility for the development and maintenance of TEIS, working in partnership with DOT, the Washington State Patrol (WSP), and the Department of Licensing (DOL).

In 2000, the "TEIS Transition Study" report recommended that a governance agreement be established between the LTC as TEIS owner and DOT as system operator. DOT responsibilities were to encompass ongoing TEIS system design, development, and maintenance. Since 2001, DOT has fulfilled these responsibilities.

In 2003, the Legislature established the Transportation 2003 "Nickel Account" and budgeted this account at the project level. This change required that budgeting, monitoring, and oversight systems track individual projects by funding source. Although outdated legacy systems within DOT did not easily support these requirements, TEIS was able to provide budgeting, planning, and reporting data at the project level.

In 2005, TPA projects were similarly budgeted. In addition, the Legislature altered the role of the Transportation Commission, made DOT a cabinet agency, eliminated LTC, and transferred ownership of TEIS to the newly-formed JTC.

Study Approach

The study focused on identifying the business needs of all key TEIS stakeholders. The LEAP study team met with TEIS community representatives and conducted a user survey to gain an understanding of the business, data, and system requirements.

The study team was also committed to: collaborating and coordinating with project stakeholders; building upon in-house knowledge and leveraging related efforts; seeking common understanding of business, data, and system requirements; and respecting distinct requirements of all TEIS users. Refer to Appendix B for a list of TEIS stakeholders and study contributors.

Although TEIS is a legislatively-owned system, the study focused on a “do no harm” approach in developing recommendations that address the business needs of system users and viable solutions that provide added value for all.

TEIS IN-DEPTH

TEIS is primarily used by the transportation committees of the Legislature, by OFM, and by DOT. Other transportation agencies are responsible for providing access to their data in TEIS. The system is comprised of four core applications. The first two are mission-critical components that provide information crucial to the budget process.

1. Capital Projects System – a budget development, reporting, and oversight tool that enables creation of project lists in the development of budget scenarios. It includes project data used for monitoring budget execution.
2. Fund Balance System – a budget development and reporting tool that enables creation of financial plans that align with budget scenarios developed in the Capital Projects System.
3. TEIS Web Site – an Internet-based application that provides public access to Capital Project information.
4. Fiscal and Performance Monitoring System – an expenditure detail and performance measurement reporting system. It can be used to support the budget process and to monitor agency and program budget expenditures and performance against plans.

Additionally, TEIS also includes components required for its ongoing maintenance and operations that the TEIS Technical Support Team administers. These components include a Change Management System, a Security Management System, a Version Control System, and a user maintenance facility.

System Usage

There are four primary uses of TEIS:

- Budget and Financial Plan Development and Reporting – legislative and executive branch budget staffs rely upon the Capital Projects and Fund Balance Systems to develop and communicate budget scenarios.
- Monitoring and Oversight Reporting – legislative and executive branch budget staffs rely upon the Capital Projects and Fund Balance Systems to oversee and communicate status of budget execution at both program and project levels.
- Capital Project Planning and Oversight Reporting – DOT project planning and oversight staffs utilize the Capital Projects System to manage their programs.
- Communication to citizens and other external stakeholders.

Refer to Appendix D for more information on capabilities and uses of TEIS components.

Different Needs Drive Different Usage

The legislative transportation committees, OFM, and DOT have common needs for budget development and oversight and rely on the TEIS Capital Projects and Fund Balance systems. Budget development cycles occur at different times of the year: DOT in the July-September timeframe, OFM in the September-December timeframe, and the Legislature throughout the legislative session, beginning in January of each year. Each of the groups relies on TEIS to gain access to official budget proposals provided by others.

Use By Legislature

The nature of the legislative environment drives changing needs for developing budget scenarios and responding to legislative decision-making information needs. Although the needs of the Senate and House transportation committees often align, each committee has its unique needs and requirements that change over time and throughout the course of a given legislative session. Unlike the Governor and DOT, the Legislature focuses on an iterative budget process resulting in an agreed-upon legislative final transportation plan. These changing needs impact how TEIS is used and the requirements placed upon it.

Use By OFM

The transition of DOT to a cabinet agency initiated a culture shift within the executive branch in relation to how transportation budgeting and oversight occur. OFM has assumed some of the responsibilities of the Transportation Commission, placing OFM in a stronger oversight role. These changes resulted in increased usage of TEIS by OFM as well as additional demands upon DOT for TEIS modifications. Unlike the iterative budget process of the Legislature, the Governor focuses on a single budget proposal.

Use By DOT

In addition to addressing budget and oversight needs, DOT utilizes TEIS extensively for operational project planning, reporting, and oversight purposes. Various divisions within DOT use TEIS to manage day-to-day operations of their programs. Some of the primary user groups within DOT include Project Control and Reporting, Financial Planning, Systems Analysis and Program Development, Highways and Local Programs, Ferries, Rail, Communications, Budget Services, and regional offices.

Several other divisions also use TEIS on a recurring basis. Some DOT TEIS users refer to the system as a “quick reference tool” for staff needing easy access to project detail and cash flow information.

Use By Other Transportation Agencies

WSP, DOL, the County Road Administration Board (CRAB), the Transportation Improvement Board (TIB), and the Freight Mobility Strategic Investment Board (FMSIB) use TEIS to provide access to their revenue and project data for analysis by the Legislature and OFM. Official project lists for CRAB and TIB are also available on their respective websites.

Governance

As TEIS system owner, JTC maintains an "Agreement of Ownership and Operation" with DOT. This agreement stipulates that in order to effect the agreement, JTC and DOT will enter into annual or biennial service level agreements. The Agreement of Ownership and Operation was signed in August of 2000 and the most recent service level agreement was signed in October of 2006. Refer to Appendix C for additional information about the most recent Service Level Agreement.

The TEIS Oversight Group meets on a regular basis to guide enhancements to system functionality and prioritize all system changes. This group is comprised of representatives from each of the key stakeholder groups.

Funding

The Legislature has provided biennial appropriations to DOT for TEIS since the 2001-03 biennium. The Legislature appropriated \$850,000 to DOT for TEIS in both the 2003-05 and 2005-07 biennia. These funds support four dedicated FTE staff as well as the workstations, servers, software, and other infrastructure required to operate and maintain TEIS. Prior to 2001-03, appropriations were made to LTC with some funding provided to DOT and other transportation agencies for their support of TEIS.

In 2006, the Legislature redirected \$50,000 of the 2005-07 TEIS appropriation to LEAP to conduct this study of TEIS.

WHAT WAS LEARNED

TEIS User Interviews

Over the course of this study, the LEAP Study team met with key users within the Legislature, OFM, DOT, and other transportation agencies. TEIS users demonstrated their use of the system and its relationship to external systems. TEIS users and agency managers provided insights and guidance on improving system functionality and usefulness to better support their diverse business needs.

These interviews resulted in the following key observations:

- TEIS – or a different system or systems – is needed to better meet the diverse business requirements for budget development and oversight use, as well as for project planning, management, and reporting.
- In addition to being a mission-critical budget development and reporting tool for the Legislature, TEIS is also a mission-critical system for OFM and DOT.
- There are many opportunities to improve and streamline the way the system components interrelate and the way TEIS interfaces with external systems.
- There is a need for strong system ownership, decision-making, and data sharing agreements to be established and actively administered.

TEIS User Survey

The LEAP study team conducted a survey of 14 of the primary TEIS users in the Legislature and OFM about their use of the various TEIS system components and their unmet system and data needs. In addition, the survey asked about system support, ownership, and general system satisfaction. Refer to Appendix E for a summary of the survey results.

The survey results indicated that most TEIS users access both the Capital Projects and Fund Balance systems as a recurring and necessary facet of their work:

- Capital Projects System – used heavily by about half of TEIS users; used moderately by many others
- Fund Balance System – used heavily by a few TEIS users; used moderately by many others
- Fiscal & Performance System – used rarely by a few system users
- TEIS Website – used by many TEIS users, primarily to direct others, such as citizens, to official versions of project lists

The survey results showed that although most users can accomplish their work with TEIS, overall, the system does not sufficiently meet their business needs.

The majority of the surveyed TEIS users responded that a change in system ownership is needed. Most users indicated that divergent user needs could be better met by separating TEIS into multiple systems. Many users referenced the WinSum and BuildSum budget development systems, maintained separately by OFM and LEAP, as examples of how such a separation might be accomplished.

Of paramount concern to TEIS users is that the system and the support staff are accessible during critical timeframes of the state budget process – especially during legislative sessions. TEIS stakeholders acknowledge the value of expert knowledge of TEIS held by DOT TEIS Technical Support Group and expressed a desire to maintain continuity of staff and preserve institutional knowledge and technical expertise. Concerns were expressed about significant technical support staff turnover.

TEIS users identified the following needed improvements:

- Integrity, reliability, and security of the system.
- Integrity, accuracy, and reliability of the data.
- Integration of systems – within TEIS and between TEIS and other systems.
- Usability of systems – easy to learn, use, and understand.
- Expanded custom analysis and reporting capabilities that provide the ability to query data and perform what-if analyses.
- Updates to the TEIS Website that provide easy access to current official and public versions of capital projects lists.
- Elimination of redundancies between systems.

Refer to Appendix F for additional information about the strengths and weaknesses of TEIS components.

Business Requirements

The interviews and user survey provided the necessary information for the study team to identify and understand the business requirements as specified in the legislation directing the study. To understand these requirements, it is useful to consider examples of questions TEIS users and others in the transportation community typically are challenged to answer.

Examples of such questions include: “how can the difference between a project list and what was enacted in the prior legislative session be communicated,” “how can variances in schedule, scope, and budget of projects be consistently and comparably reported,” and “what does it mean to have a balanced financial plan?”

To answer these questions, the following are necessary: (1) access to accurate data needed to develop and monitor project lists and financial plans; (2) tools and technology that provide access to the data for manipulation and reporting; and (3) business processes and rules that determine how the data are accessed, modified, presented, and preserved.

Transportation Budget Data:

- assure accuracy and reliability through data validation and system integrity
- ensure security through database and data access security protocols

Tools and Technology:

- accessible and reliable, especially during legislative sessions
- seamless integration to minimize repetitive manual operations and data re-keying
- intuitive and useful with robust, flexible analytical and reporting capabilities

- system functionality that aligns with the TEIS strategic plan and meets the unique and distinct needs of the transportation budget process
- maintained by support staff with technical and TEIS business process expertise

Agreed-Upon Business Processes and Rules

- each capital projects list is clearly defined and identifiable
- each capital projects list has a clearly defined and identifiable correlating financial plan
- project tracking from original appropriation through implementation (TEIS users expressed concern about preservation of project identifiers through the life of a project)
- clear and consistent communication of project and funding assumptions (e.g.; bond and inflation rates)

Many factors contribute to changes in business needs. A key driver influencing the changing business needs for TEIS was the initiation of budgeting at the project level beginning with the 2003-05 budget and the "Nickel Package" and continued with the "TPA Package" in 2005-07. These changes required project reporting capability at the fund source by project level.

Analysis of system usage from fiscal year 2002 through fiscal year 2006 revealed the following:

- The Legislature is dependent upon TEIS to create and maintain official project lists that align with a balanced financial plan to develop budget scenarios and oversee budget execution.

The Legislature's usage of the Capital Projects System has remained strong and they are the biggest user of the Fund Balance System, with increased usage since 2002.

- OFM increased their role in transportation budget and oversight since DOT became a cabinet agency.

OFM usage of Capital Projects and Fund Balance has grown significantly from 2002.

- DOT has increased their use of TEIS, primarily for day-to-day operations, planning, and oversight. The increased and diverse use of TEIS within DOT has been the largest contributing factor to the present state of TEIS attempting to meet divergent business needs in a common system.

DOT is the biggest user of Capital Projects and their usage has grown nine-fold from 2002.

Refer to Appendix G for information on the history of TEIS usage.

Another change influencing TEIS business needs is that over the past five to six years, other transportation agencies, particularly WSP and DOL, have transitioned from active system users and contributors, to solely using TEIS to input their data for review by OFM and the Legislature, and validating that the system is correctly representing their data. More sophisticated and accessible systems internal to the agencies as well as enterprise systems, such as "Fastrack" managed by OFM, have decreased their reliance on TEIS.

In addition, emerging systems and project management and reporting capabilities within DOT will most likely impact the future use of TEIS by DOT. DOT Strategic Program Management Group's (SPMG) Project Management and Reporting System (PMRS) effort is a good example of this. Although the PMRS is not expected to be in production for another three years, it is essential that

future transportation budget and oversight system development efforts be coordinated with PMRS and other related systems.

Section 603 of the 2006 Transportation Budget Bill (SSB 6241 – C 370, L 06, PV, Sec 603), altered the review and approval process of transfers affecting projects on the official, current enacted project list. The legislation included changes to the roles of both OFM and LEAP in this process. All key stakeholders rely on TEIS to provide vital information on proposed and approved changes to the official project lists in response to Section 603 reporting requirements.

In response to a JLARC capital budget audit, OFM is working with state agencies to design and develop a consolidated capital budget system that replaces OFM's internal capital budget development system (BuildSum) and the line-agency Capital Budget System (CBS). OFM is assessing the feasibility of incorporating modifications into this new system that would allow them to address the transportation unique capital budget needs more effectively. OFM is also planning to evaluate enhancement of their revenue projection system to support transportation-specific fund balance requirements.

RECOMMENDATIONS

During the study process as legislative business needs were defined, it was recommended that 2006 interim system change requests for TEIS be reprioritized. Those changes are now occurring and will provide immediate benefit to TEIS users. Some key improvements that will be implemented for the 2007 legislative session include: automated interfaces between TEIS system components and between TEIS and external systems; improved project reporting; and improved systems and data security. In addition, an updated Service Level Agreement between JTC and DOT was put in place.

The entire TEIS system design and underlying architecture are outdated and the system needs to be replaced or reengineered in current technology for better integration and to satisfy legislative users' business needs. Replacement systems should be developed for use by the 2009 legislative session. TEIS needs to remain in use through the 2008 legislative session.

Currently, OFM is developing a new statewide Omnibus Capital Budget Development System and is planning to expand its scope to include the transportation capital budget. The new system could replace the capital projects component within TEIS, addressing the need for system reengineering. A detailed analysis of system requirements will be necessary before it is determined that this new system can be a viable replacement option for all or parts of TEIS. If it is determined that it is not a viable option, TEIS will still need to be replaced or reengineered.

Additionally, new reporting and fund balance systems need to be created to integrate with the new capital budget development system. In order to provide necessary oversight capability for the Legislature and OFM, OFM needs to require that project-level capital data be made available by DOT within AFRS as part of the monthly expenditure reporting.

OFM, the Legislature, DOT, and other transportation stakeholders need to work collaboratively to identify transportation-unique business requirements and assist with incorporating those requirements into the new capital budget system.

Regardless of who owns and who operates TEIS or replacement systems in the future, strong governance agreements, change management processes, and data sharing agreements need to be in place and administered. These processes and agreements will need to be readdressed as changes to system ownership and changes to system linkages occur.

Transportation Budgeting System Future Strategy

Immediate Implementation Approach – through end of 2005-07 biennium

Things That Stay the Same:

The Legislature will continue to own TEIS, DOT will continue to operate TEIS, a governance agreement will be in place between the Legislature and DOT to ensure timely and reliable data exchanges and stable system operations, and an oversight group will continue to guide system improvements.

Things That Will Change:

LEAP's role with TEIS and the transportation budgeting process will continue to increase. Specific impacts to LEAP include establishing a role as the "Legislative TEIS Technical Coordinator" and expanding the knowledge base of TEIS and the transportation budget process.

The transportation committees of the Legislature, LEAP, OFM, and DOT will all be involved in defining transportation-unique requirements for a new transportation capital budget system and defining data sharing agreements. This could potentially result in resource impacts for these agencies. LEAP will work collaboratively with OFM to initiate the design, development, and implementation of this customized system. Existing funds targeted for the transportation business needs assessment can be redirected to support initial work on these activities.

In order to "jump start" the requirements definition process and for the design and development of a new transportation capital budget system, LEAP capacity will need to be expanded. Expanding LEAP capacity will require additional funding to address both one-time and ongoing costs as well as FTE authorization for fiscal year 2007. Additional capacity will be required for the 2007-09 biennium.

Key Immediate-Term Implementation Strategies:

- ✓ Establish a "learning copy" of TEIS at LEAP. This can be accommodated within the existing LEAP technical infrastructure as it will not be required to be a fully-functioning development, test, and production environment. This hands-on access to the application code and underlying data structures will provide LEAP an early opportunity to learn the system and will ensure that the distinct business needs of the staffs of the legislative transportation committees drive the definition and design of a future transportation budget system.
- ✓ LEAP will work with the legislative transportation committees, OFM, and DOT to define detailed business requirements. This will entail:
 - creating a strategic plan that encompasses legislative transportation budgeting analysis and decision-making business needs;
 - assessing the information needs of the transportation budget process and recommend improvements based on the transportation budgeting strategic plan – encompassing all mission-critical systems used in the budget process; and

- defining and prioritizing detailed business requirements to be addressed by future transportation budget systems, including business rules and data sharing protocols, and considering capabilities of new or existing systems.

Examples of requirements identified by the transportation community include:

- Integration of capital projects and fund balance capabilities
- Robust reporting and analytical capabilities to support the following for both capital projects and fund balance:
 - Budget development at the project level and fund detail
 - Budget monitoring and oversight
 - Budget scenario and historical version comparisons
 - Data modeling and what-if analysis
- Incorporate a bond model into future fund balance capability
- Ability to easily add new fund types into both the Fund Balance and Capital Projects systems
- Current and correct project geographical information system (GIS) location information, ensuring information is complete and consistent across systems

- ✓ Assess the viability of OFM's new capital budget system, or a different system, providing the tools needed to address the transportation-unique business requirements.
- ✓ OFM and LEAP will work collaboratively and in consultation with transportation staffs to plan and design a new system to meet their needs for capital project list and fund balance development, analysis, and reporting.
- ✓ LEAP will work collaboratively with DOT TEIS technical support staff to begin implementing the following critical changes to TEIS for its use in the 2008 legislative session:
 - eliminate hard-coded database calls in the application code;
 - incorporate error trapping, error logging, and audit trail procedures into the application code; and
 - correctly and consistently display system selection criteria.

Additional changes specific to the TEIS website include:

- Streamline content by removing outdated and unused data and notify data providers of elimination of reporting requirements (e.g.; quarterly performance reports from DOL and WSP).
- Ensure existing content is kept current and includes access to official, public versions of the capital projects lists.
- Improve the project list reporting to make it easy to use and understand.
- Clearly distinguish content specific to the TEIS application from content about transportation projects.

Refer to Appendix H for information on 2007 Interim planned enhancements to TEIS.

Short-Term Implementation Approach – beginning in the 2007-09 biennium

Things That Stay the Same:

TEIS will continue to be available to the Legislature and OFM at least through the end of fiscal year 2008. LEAP will continue to work collaboratively with OFM in the development and implementation of the new capital budget system designed to support transportation requirements.

Things That Will Change:

LEAP will work with DOT and OFM to implement expenditure reporting by project in AFRS. Fund balance, reporting, and data analysis capabilities will be developed to meet transportation-specific needs.

The role of TEIS and how it is used will likely change as the Legislature, OFM, and DOT begin using the new system for budgeting purposes, starting in the 2009 legislative session.

Key Short-Term Implementation Strategies:

LEAP will work collaboratively with OFM and in consultation with the TEIS user community throughout the development of the new capital budget system to:

1. integrate transportation-specific capital budget needs into the new system;
2. initiate development of robust budgeting and oversight reporting capability that includes data from the new system as well as program and project monitoring data from AFRS;
3. initiate development of robust data modeling and what-if analysis capabilities; and
4. create a new fund balance capability that seamlessly integrates with the capital and operating budget systems.

Well in advance of the 2009 legislative session, after the new system fully incorporates transportation-specific needs, LEAP will bring a copy of the system into the legislative environment and make the following changes for use by the Legislature:

- customize security within the system to ensure legislative committees have secure access to their own data;
- establish the data sharing protocols and necessary system connectivity to be able to easily and seamlessly transfer data between committee staffs and between the Legislature, OFM, DOT, and other system users; and
- modify all system components, as needed, to address the transportation-unique needs of the Legislature.

LEAP will need to establish a parallel system infrastructure in the legislative environment as well as establish the staffing capacity to maintain and support the new system and support the emerging and dynamic needs of the staffs of the transportation committees.

Previously-referenced data sharing agreements will be critical to ensuring the timely transfer of data and the accuracy, reliability, and integrity of the transferred data.

Additional Short-Term Recommendations:

Clarify Roles and Responsibilities

System governance and decision-making agreements need to be established to ensure alignment of systems and the integrity and reliability of data. Although there will be a continued role for the interagency TEIS Oversight Group, there will also be a need to establish separate guidance committees as new systems are created.

Improved, streamlined data submittal and validation processes need to be established for WSP, DOL, CRAB, TIB, and FMSIB. Those other transportation agencies that have a position on the TEIS Oversight Group and Change Control Board should have the option to withdraw from their current positions on the TEIS Oversight Group.

Restructure the Change Management Process

The existing change management process will need to change to support a future transportation budgeting system operations and governance structure.

Some additional changes needed to better align decision-making processes with system usage and business needs include:

- revisiting the timeframe for system “lockdown” before each legislative session to better accommodate the needs of DOT and OFM for system stability during different budget development cycles; and
- ensuring adherence to the agreed-upon change management process.

Long-Term Recommendations:

In the 2007-09 biennium, ongoing TEIS operational requirements at DOT need to be analyzed. Two factors impacting that analysis will be: the implementation of a new transportation capital budgeting system that potentially eliminates the need for long-term reliance on TEIS; and the implementation of both the Project Management and Reporting System and other core system improvements at DOT that are anticipated over the next several years.

In developing the recommendations, the LEAP study team evaluated several alternative strategies. Information on these strategies is located in Appendix I.

SUMMARY

The process of conducting this study has greatly enhanced LEAP's knowledge of the transportation budgeting process. This will enable the agency to contribute more actively in ensuring that future systems meet the unique and changing business needs of the transportation committees of the Legislature.

The collaborative nature of the study has set the stage for LEAP, OFM, DOT, and the staffs of the transportation committees to work together to implement the recommendations contained in this report.

For additional information or to contact the LEAP Study Team, refer to Appendix J.

APPENDICES

Appendix A – Study Authorization

The LEAP Committee was appropriated \$50,000 to evaluate the current and emerging business needs of the legislative transportation fiscal committee staffs and recommend improvements with respect to TEIS by December 1, 2006.

Budget Proviso in 2006 Transportation Budget Bill SSB 6241 (C 370, L 06, PV, Sec 105):

" Sec. 105. A new section is added to 2005 c 313 (uncodified) to read as follows:
FOR THE LEGISLATIVE EVALUATION AND ACCOUNTABILITY PROGRAM COMMITTEE
Motor Vehicle Account--State Appropriation \$50,000
The appropriation in this section is subject to the following conditions and limitations: The total appropriation is provided solely for an evaluation of the current business needs of the legislative transportation fiscal committee staffs with respect to the transportation executive information system (TEIS). The committee shall work with the staffs of the transportation committees, the office of financial management, and the department of transportation to perform the evaluation. Results of the evaluation, including any recommendation for system improvements and usability, shall be submitted to the transportation committees of the Legislature and the office of financial management by December 1, 2006."

Appendix B – TEIS Stakeholders and Study Contributors

The LEAP TEIS Study Team would like to extend its appreciation for the contributions and guidance provided by staff from the following organizations:

Key Stakeholders and Contributors

- Joint Transportation Committee (JTC)
- House Transportation Committee (HTC)
- Senate Transportation Committee (STC)
- Office of Financial Management (OFM) and Governor's Office
- Department of Transportation (DOT)
- Legislative Evaluation and Accountability Program (LEAP) Committee

Additional Stakeholders

- Washington State Patrol (WSP)
- Department of Licensing (DOL)
- County Road Administration Board (CRAB)
- Transportation Improvement Board (TIB)

The Study Team would like to specifically acknowledge the TEIS expertise and many contributions of Bob Maxwell, TEIS Technical Support Staff Team Leader.

Appendix C – TEIS Governance

A new Service Level Agreement between JTC and DOT was put in place for fiscal year 2007. The previous agreement was for fiscal year 2001. This new agreement included improvements to reporting requirements on system usage, status, infrastructure, staffing, and expenditures. It also clarified roles and responsibilities.

Appendix D – Capabilities and Uses of TEIS Components

The following provides general capabilities and sample uses of the various TEIS system components:

TEIS Component	Capabilities	Uses
Capital Projects System	Versions of project lists	Build & maintain versions of project lists; compare budgeted to actual project activity
Fund Balance System	Fund management	Maintain fund balance versions that correlate with specific capital project lists
Fiscal Oversight & Performance Management System	State agency expenditure, staffing and performance reports	Perform monitoring and fiscal oversight
TEIS Website	Public access to official versions of project lists	Refer legislators, agencies, citizens and other external stakeholders to view official project lists
Change Management System	Detail catalog of system change requests and their resolution status	Track requested fixes and enhancements to system components

Although the Transportation Resource Manual has long been considered a core system component of TEIS, it currently consists of a hyperlink in TEIS to the Transportation Resource Manual document on the Internet. The online access to the manual provides easy access to a hyperlinked PDF version of the manual.

Appendix E – TEIS User Survey Results

Transportation Executive Information System Survey Results: 14 TEIS Users Surveyed

		Percent	Total
1. Do you use the Capital Projects System?	Yes - Heavy Use	29%	4
	Yes - Moderate Use	36%	5
	Yes - Seldom Use	21%	3
	No	14%	2
2. Do redundancies exist between the Capital Projects System and other systems?	No	50%	6
	Yes	50%	6
3. Do you use the Fund Balance System?	Yes - Heavy Use	14%	2
	Yes - Moderate Use	50%	7
	Yes - Seldom Use	7%	1
	No	29%	4
4. Do redundancies exist between the Fund Balance System and other systems?	No	70%	7
	Yes	30%	3
5. Do you use the Fiscal and Performance Monitoring System?	Yes - Heavy Use	0%	0
	Yes - Moderate Use	7%	1
	Yes - Seldom Use	20%	3
	No	73%	11
6. Do redundancies exist between the Fiscal & Performance Monitoring System and other systems?	No	0%	0
	Yes	100%	3
7. Do you use the TEIS Website?	Yes - Heavy Use	0%	0
	Yes - Moderate Use	21%	3
	Yes - Seldom Use	29%	4
	No	50%	7
8. Overall, does TEIS meet your business needs?	No	86%	12
	Yes	14%	2
9. Should there be more than one "adaptation" of TEIS (e.g., legislative and executive)?	No	7%	1
	Yes	93%	13

Notes: The study team conducted the survey in August and September 2006. Participants included JTC staff and TEIS users in the STC, HTC, and OFM.

Appendix F – TEIS Components: Strengths and Weaknesses

A common strength of the current system is that most users can accomplish their work in the system and feel confident that if they encounter obstacles, the TEIS Technical Support Team can quickly assist them. Common system weaknesses are that the system components are all very difficult to learn and to use, and user training and system documentation need to be improved. In general, the system is not geared toward the needs of the novice or infrequent user.

The following represent some of the strengths and weaknesses highlighted by TEIS users, specific to individual system components:

TEIS Component	Strengths	Weaknesses
Capital Projects System	Meets most basic needs of clients Robust capability	Does not interface with (or tie to) Fund Balance System Does not have load into WinSum Limited historical data stream
Fund Balance System	Meets client needs Provides needed functionality	Does not interface with (or tie to) Capital Projects System Limited historical data stream
Fiscal Oversight & Performance Management System	Access to data in a common interface	Redundant data Lack of knowledge of how to use Does not work for all users
TEIS Web Site	Public access to official project lists	Project location information not kept current Not all official versions available DOT project pages do not contain TEIS/CPMS PINs
Change Management System	Very detailed history of system change requests	Some information not meaningful to users Inconsistent categorization of requests Lack of clarity of request status Not tied closely to Change Management Process

As mentioned above in Appendix D, the Transportation Resource Manual option within TEIS consists of a hyperlink to the online manual on the Internet. This study recommends that the JTC, HTC, and STC websites all reference a common site that contains hyperlinked HTML versions of the manual, both as a single document and split by chapter.

NOTE: These strengths and weaknesses were compiled from interviews that occurred prior to reprioritization of 2006 Interim TEIS changes. The reprioritization resulted in improved interfaces within the system and between it and other systems.

Appendix G – History of TEIS Usage

TEIS technical support staff have been able to capture number of logins and duration of login sessions by user, by TEIS system component. Although useful information, number of logins does not necessarily correlate with actual system usage. For example, some system users may login frequently with minimal system activity, while others login infrequently with significant system activity.

Fiscal Year 2006 System Usage:

	Number of Active Users	Number of Logins by System	
		Capital Projects	Fund Balance
Legislature	15	1,537	809
OFM	5	256	185
DOT	122	7,989	187
Others	10	19	20
Totals:	152	9,801	1,201

Note: The Fiscal and Performance Monitoring System had a total of 271 user logins in fiscal year 2006.

Fiscal Year 2002 - 2006 System Usage based on System Logins:

	Capital Projects System		Fund Balance System	
	2002	2006	2002	2006
Legislature	1,346	1,537	92	809
OFM	1	256	0	185
DOT	925	7,989	40	187
Others	90	19	4	20
Totals:	1,362	9,801	136	1,201

Appendix H – Planned TEIS Enhancements for 2007 Interim

In addition to many additional planned system improvements, pending TEIS enhancement requests include:

- A new user Capital Projects System interface for DOT system users that is easier to understand and use; and
- A new data mart capability to support DOT internal operations and data analysis needs.

Although these enhancements will initially directly benefit only DOT, there may be an opportunity to assess the potential value to the remainder of the TEIS user community.

Appendix I – Alternative Strategies Considered

The TEIS Study Team evaluated alternative future transportation budget system strategies and assessed their viability and ability to meet the business requirements outlined in this report.

Alternative strategies that were determined nonviable would have a legislative agency receiving the funding for a transportation budget system and they would either contract with DOT for continued management and operations of TEIS; contract with a private contractor, outsourcing management and operations of TEIS; or provide direct operational support of a legislative system to all legislative and executive branch users.

Analysis of these alternative strategies proved them nonviable because they either did not address one or more critical business requirements for TEIS, or they did not offer significant improvement over the current state.

Study recommendations support a combination of strategies, addressing both immediate and short-term business requirements:

- As described in the body of the report, through the 2008 legislative session and at least through the remainder of that fiscal year, DOT will continue providing TEIS development, maintenance, and support for the Legislature and OFM. This represents *Strategy One* outlined on the following page.
- During this timeframe, LEAP will be working collaboratively with OFM, DOT, and the staffs of the legislative transportation committees to design and develop a robust transportation capital budget system that meets their specific needs. Once development is complete, LEAP will bring a copy of the system into the legislative environment and establish a parallel system infrastructure. This represents *Strategy Two* as outlined on the following page. At that time, DOT may choose to continue maintaining TEIS for their internal operational use.

Summary of proposed alternative strategies benefits and risks:

The following two strategies were considered the most viable for improving the way TEIS (or some future replacement system) addresses the users' business requirements:

Strategy 1: "Modified As Is"	Strategy 2: "Multiple Systems"
DESCRIPTION	
<ul style="list-style-type: none"> ▪ The Legislature continues to own TEIS ▪ DOT continues to operate TEIS ▪ LEAP is designated "Legislative TEIS Technical Coordinator" 	<ul style="list-style-type: none"> ▪ Separate Legislative and Executive Systems or: ▪ Separate Budgeting/Reporting and Planning/Reporting Systems or: ▪ A hybrid of these two options or some other "functional" division of system capabilities
BENEFITS	
<p>Legislature reliant upon executive branch to manage and operate a legislative system and provide secure access to data.</p> <p>Governance and other decision making agreements should ensure all key stakeholders' needs are met.</p>	<p>Benefits all - able to manage TEIS to meet their own distinct needs: Legislative business needs will be met and the executive branch can shape TEIS to best meet their business needs.</p> <p>An improved data security model can be implemented.</p> <p>Existing legislative and executive budget system technical resources can be leveraged to enhance existing limited TEIS knowledge base.</p>
RISKS	
<p>An executive branch agency responsible for supporting legislative system users.</p> <p>Divergent business needs not effectively addressed by current system.</p> <p>Reliant on data sharing agreements, communication, and coordination with data providers.</p> <p>Dependent on limited expert staff for technical and system institutional knowledge</p>	<p>Potential redundant and eventual divergent systems.</p> <p>Heavily reliant on data sharing agreements, communication, and coordination with data providers.</p>

Analysis of the resultant impacts of the two proposed strategies:

	Strategy 1: "Modified As Is"	Strategy 2: "Multiple Systems"
COST		
Staff	Low Impact	Medium-High Impact
IT & Other Infrastructure	Low Impact	Medium-High Impact
NEEDS MET		
Business Processes	Not Sufficiently Met	Legislative and Executive needs can be met
Systems (complexity to implement)	Low Impact	Medium-High Impact
System Changes Required and Transitional Impacts	Continued improvements	Needs strong interface between DOT systems, other external systems, and the Legislature System improvements will be fewer as more resource will need to focus on new development and transition-related activities
OTHER STAFF & ORGANIZATION IMPACTS		
Staff Knowledge: TEIS Institutional Knowledge Data Knowledge Business Knowledge Technical Knowledge	Low Impact No change needed to TEIS technical staffing levels	Medium-High Impact The Legislature would need to acquire additional technical support staff (1-2 additional FTE) OFM would need to acquire additional technical support staff (up to 1 additional FTE)
BUDGET		
	Low Impact	Medium-High Impact One-time costs would be high to establish staffing and systems infrastructure; potential need for consulting resources Ongoing costs would be medium to provide the staff and infrastructure for system maintenance and support

NOTE: System replacement or reengineering will have a high impact for each of the scenarios.

Appendix J – TEIS Study Team Contact Information

The Washington State Legislative Evaluation and Accountability Program (LEAP) Committee TEIS Study Team was comprised of the following staff:

Tom Jensen
Scott Sheeran
Jean Barlin
Julie Danton
Lori Bame

Several additional LEAP staff contributed to this study by providing technical and business expertise and assistance with report compilation.

For more information, please contact the LEAP staff at:

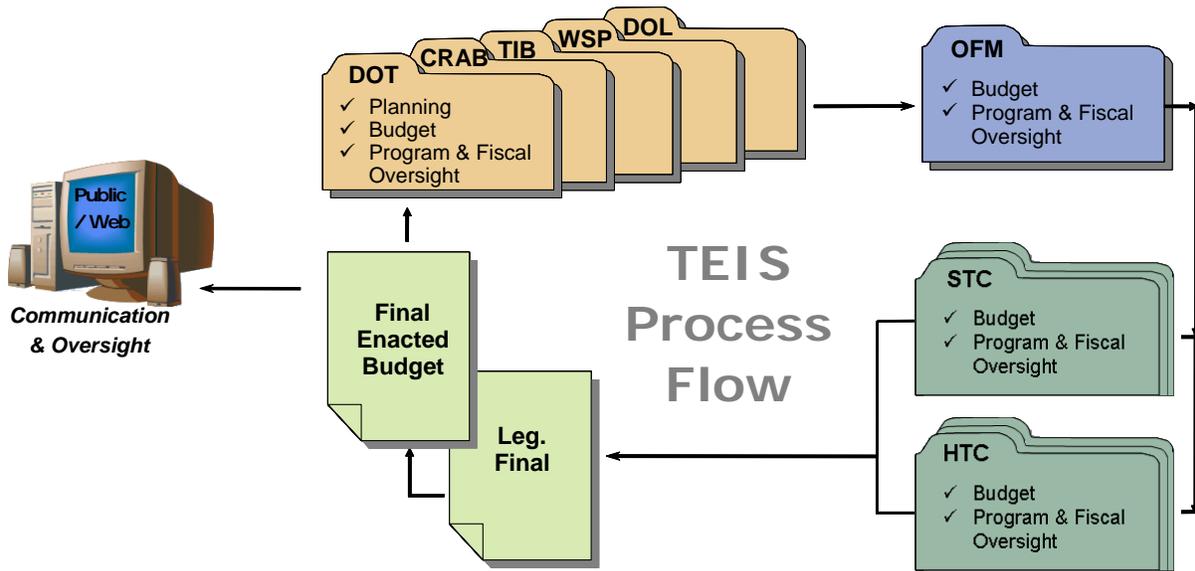
3309 Capitol Boulevard, P.O. Box 40934
Olympia, Washington 98504-0934
(360) 786-6111 • (360) 786-6130 (fax)

An electronic version of this study report is available on the LEAP website: <http://leap.leg.wa.gov>.

WORKING PAPERS

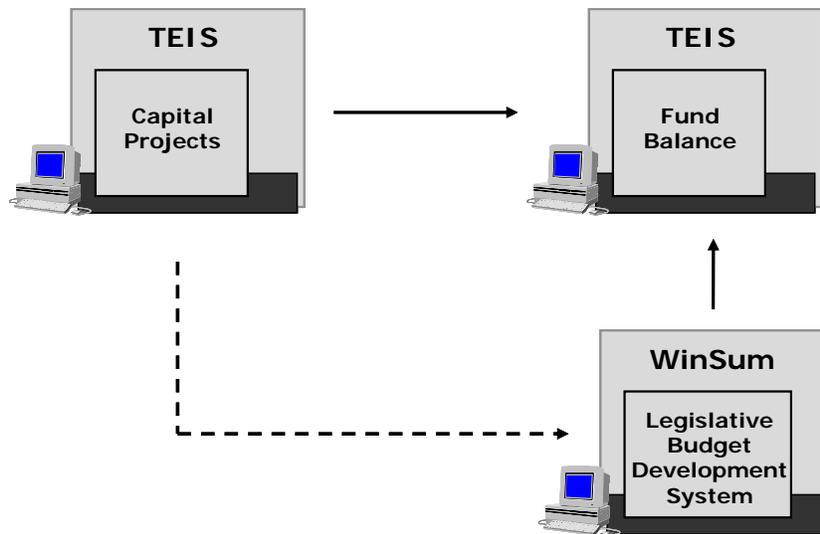
WP.1 – System Details

Business Process Flow Diagram



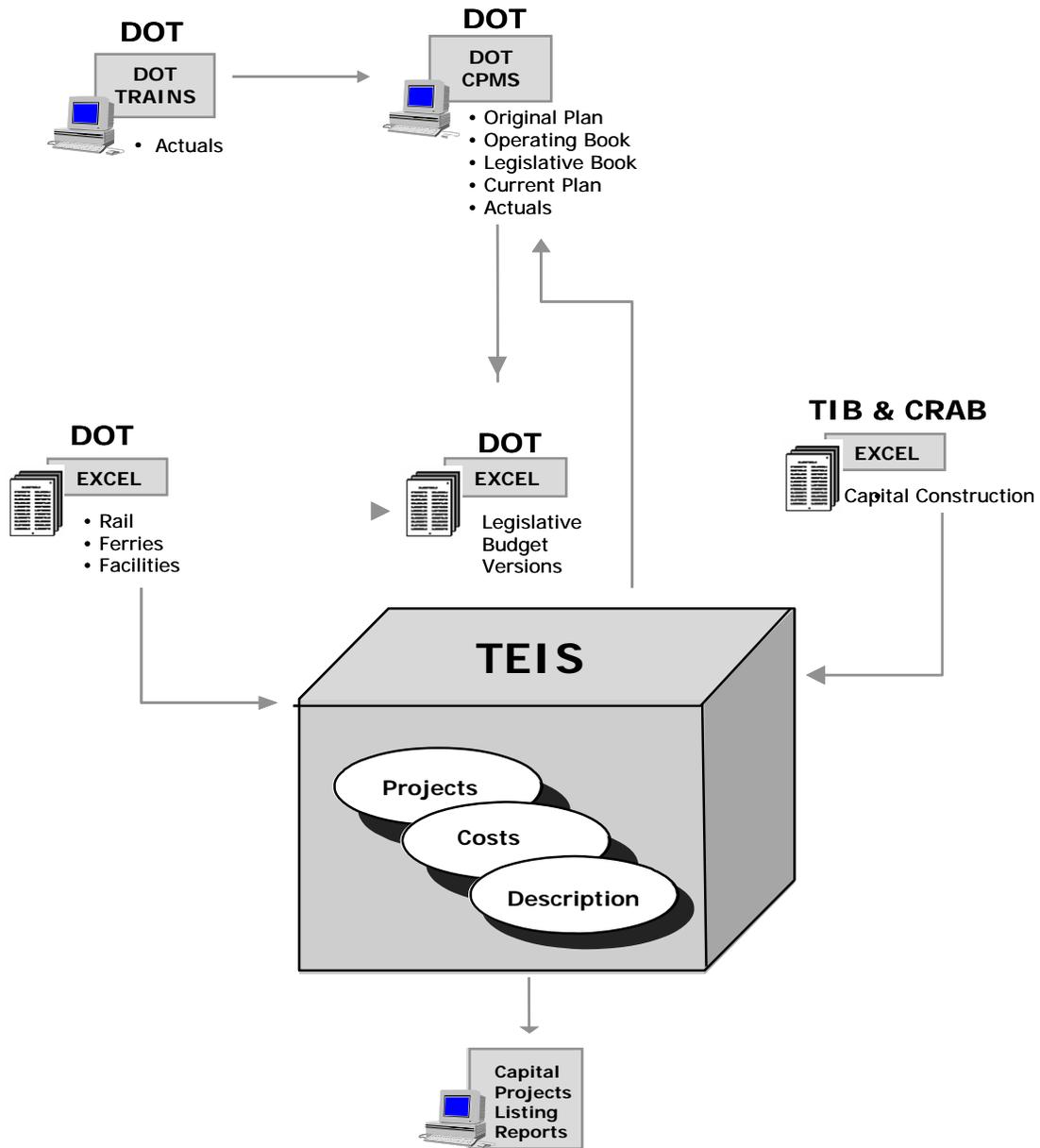
System and Data Flow Diagrams

Budget Development Data Flow



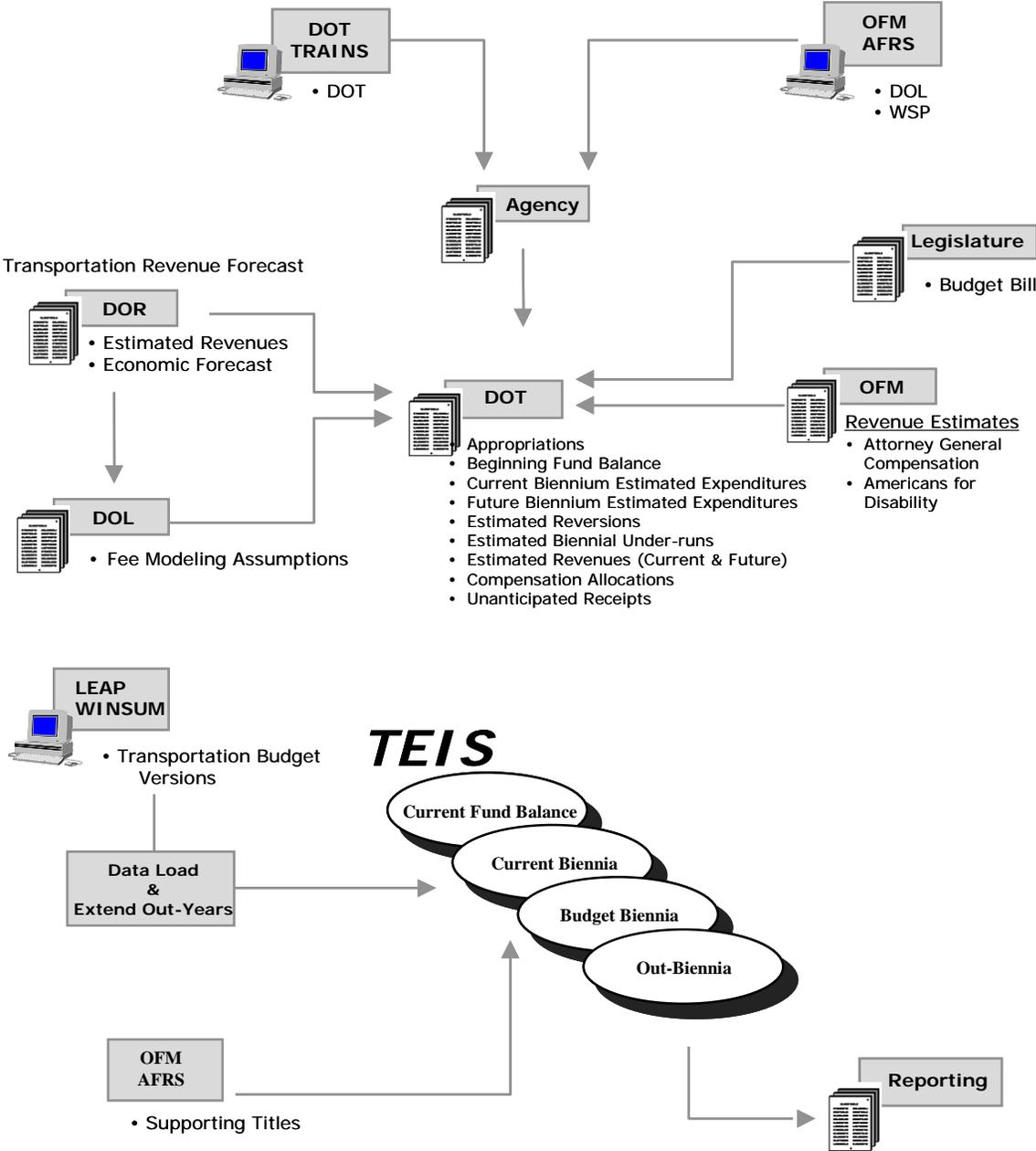
Note: The process of feeding Capital Projects data into the WinSum System currently requires manual re-keying of data. An automated data feed between the two systems is being implemented for the 2007 legislative session.

Transportation Executive Information System (TEIS) Capital Projects System Data Flow Diagram



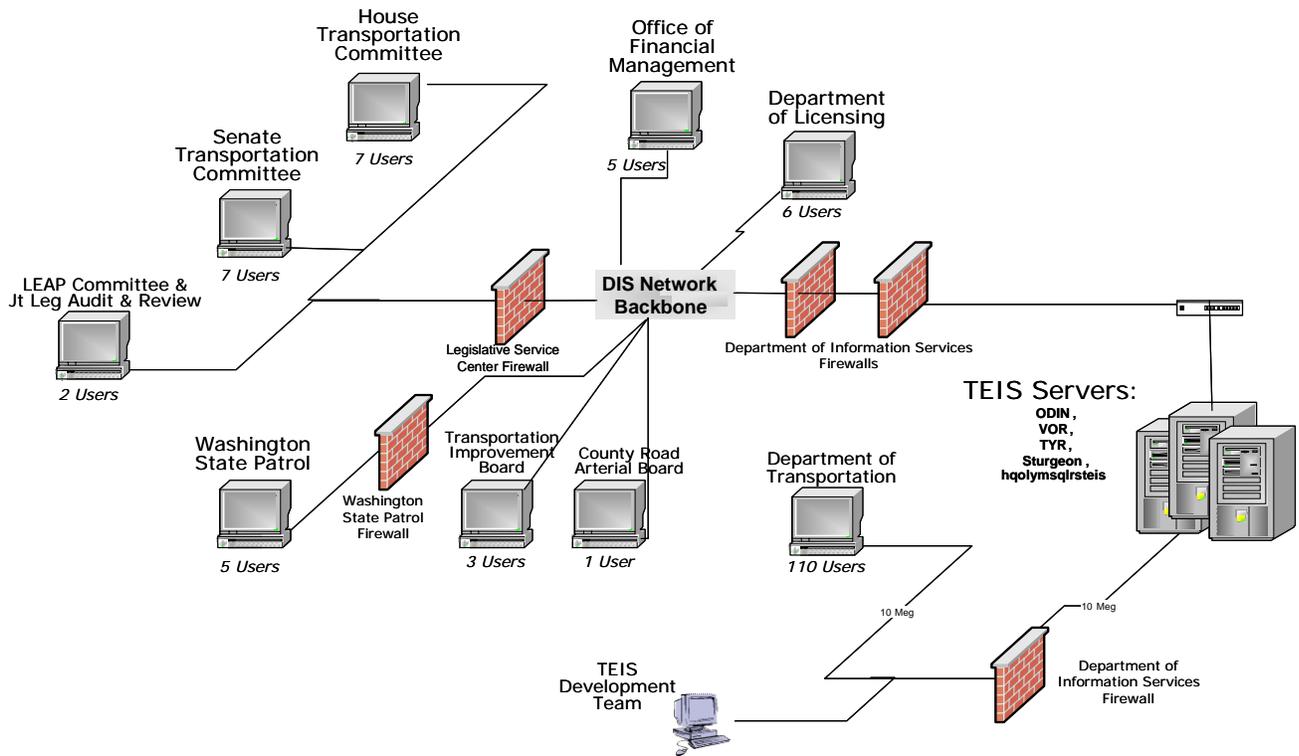
Note: The diagram above has been updated from the Shamrock Systems, Inc. 2000 "TEIS Transition Study" report. DOT will be updating all TEIS documentation beginning January 2007.

Transportation Executive Information System (TEIS) Fund Balance System Data Flow Diagram



Note: The diagram above has been updated from the Shamrock Systems, Inc. 2000 "TEIS Transition Study" report. DOT will be updating all TEIS documentation beginning January 2007.

Transportation Executive Information System (TEIS) System Infrastructure and Usage



Note: The diagram above has been updated from the Shamrock Systems, Inc. 2000 "TEIS Transition Study" report. DOT will be updating all TEIS documentation beginning January 2007.